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a. If letter or memo:
To: J. W. McCASLIN

From: O. L. CORDES

Subject: TAN-SPERT Health Physics Progress Report for November, 1965, Cord-80-65A

b. If report:
Title:

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5. Summary (2-3 lines indicating the major subject(s) of the document):

Monthly Health Physics activity/progress report: preperations for SNAPTRAN-2 test; SPERT area activities; PBF support; Radiological Engineering involvement in fission product calculations, computer programming training, and dose calculations. Two trips to Washington, DC to assist with PBF PSAR presentations to ACRS.

6. Name and telephone number of person completing form:	7. Organization:	8. Date:
Burton R Baldwin (208) 525-0203	Lockheed Idaho Technologies Co.	March 15, 1995

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HUMAN RADIATION EXPERIMENTS

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PHILLIPS PETROLEUM COMPANY
Atomic Energy Division
Idaho Falls, Idaho

December 15, 1965

TAN-SPERT Health Physics Progress Report for November, 1965
Cord-80-65A

Mr. J. W. McCaslin
O F F I C E

The monthly report of the TAN-SPERT Health Physics Section for November, 1965, is as follows:

TSF

The major activities requiring HP coverage in the TSF area during November were:

1. PM-2A work in the Hot Shop
2. Coverage of RML and HCA
3. Fuel element transfer in the pool area
4. Hot waste transfer to the burial ground
5. Coverage of a KAPL hanger rod.

Contamination levels great enough to require decontamination were discovered at intermediate periods in the Hot Shop Control Gallery, pool area, evaporator, decontamination change room and the HCA tool storage area. All areas were successfully decontaminated after one mopping.

Tracerlab remote area monitors to be put into service in the Hot Shop were received and calibrated. One of these detectors has the capability of monitoring radiation fields up to 10^6 r/hr. Because of this feature the detector was used to monitor the ARVFS experiment. This experiment produced radiation fields up to 10^4 r/hr giving an opportunity to check this detecting system at its designed range.

DECONTAMINATION FACILITIES

The major items decontaminated, chemically cleaned or sandblasted during November include:

1. 9 casks
2. 3 salt mine fuel storage cans
3. Manipulator impact tools
4. PM-2A tools and equipment
5. 24 emergency lamps
6. LOFT steam chamber vessel

SPERT

Routine operations required health physics surveillance at all four reactor areas during the month. Contamination and radiation surveys are continually being made in each area where contamination may be suspected.

The only abnormal case of radiation occurred after a 10 minute, 500 kw calibration run at SPERT IV. Air activity, with a peak concentration of approximately 6 x RCG, delayed re-entry into the building. There is a possibility that one or more of the fuel rods may be leaking fission gases. Without the services of a multi-channel analyzer it is impossible to determine if the short lived activity is due to fission products.

SNAPTRAN

Lead, polyethylene and a borox-alcohol-water mixture was positioned to shield the EG&G photographic equipment against radiation during the SNAPTRAN-2 destructive test. Neutron and gamma ray attenuation factors were measured during a series of transients to determine the effectiveness of this shielding. Results from the reactor transient experiments indicated an average fast neutron attenuation of 4.3 and an average attenuation for gamma radiation of 5.5. These attenuation factors were influenced by considerable sky shine and back scattering from surrounding environment.

Two dry runs were performed during the month in preparation for the SNAPTRAN-2 destructive test. On one of the dry runs a successful checkout was made of the portable radio to be used in the aircraft. This radio is connected to the HP network and will give a tie between ground operations and aerial photography and observation.

During the dry runs all of the powered grid equipment was activated and found to be operating properly. With the exception of positioning some of the static monitoring instruments on the grid, the Health Physics Section is prepared to participate in the SNAPTRAN-2 Destructive Test.

RADIOLOGICAL ENGINEERING

Efforts were continued to perfect hand calculations which are independent of the RSAC code. Specifically, radiation doses resulting from the inhalation and ingestion of radioactive material, external gamma doses from radioactive clouds and the deposition of radioactive material can be computed from hand calculations. The capability for calculating the fission product inventory, after various operating histories, has also been developed. Literature research was also continued in the areas of fission product release and transport mechanisms, atmospheric diffusion and biological dose calculations.

Two trips were made to Washington to aid in the presentation of the PBF PSAR to the ACRS and an ACRS subcommittee. (Trip reports are contained in Cord-70-65A).

SPECIAL PROBLEMS

A microscopic particle measuring 150 microns by 90 microns was found on a TAN-607 CAM filter. This CAM has a sniffer hose attached to it which was monitoring the interior of the Hot Shop. The particle was isolated and mounted on a glass microscope slide for viewing on the microscope. After observation and sizing studies the slide was stored for about 3 weeks and over this period of time the particle's radiation discolored the glass slide in the vicinity of the particle. Exposure of a similar glass slide to a known cobalt-60 source indicates that about 10^5 r is required to discolor the glass. By correlating this information with the time exposure of the particle indicates the particle had a surface exposure rate of about 200 r/hr. During later examinations the original particle broke into a number of smaller particles, nine of which have been isolated on microscope slides. As time permits, the biological hazard of the particles will be evaluated.

Assistance was given to STEP Personnel in the preparation of the LOFT radiological grid budget for the fiscal years of 67, 68 and 69.

TRAINING

E. L. Goven and J. R. Fielding are attending a class in symbolic programming for the IBM 7040 which is being taught by the Mathematical Analysis Branch. This class is oriented towards training programmers in the Mathematical Analysis Branch but inasmuch as we are from time to time involved in programming special problems and also deciphering codes dealing with fission product release, transport and biological dose calculations we are benefiting from the information being presented.

Monte Hawkins from ATR spent two weeks in the TAN-SPERT Radiological Engineering Section assisting in making radiation dose calculations for accident analyses in connection with the ATR SAR. The literature research material and meteorological dose calculational methods were presented to Monte to provide some experience in this area to that portion of our branch which will be associated with the new contractor.

Larry O. Miller spent the first week in November acquiring experience in high level radiation monitoring at ETR. This training period coincided with an ETR shutdown thereby giving Larry some valuable experience with health physics activities associated with a shutdown.

SUMMARY OF ROUTINE WORK

Smears	1700
Direct reading dosimeters issued	40
Body fluid samples	
Routine	94
Special	13
Liquid samples	
Waste water	2
Radioactive shipments	
Off-site	5
On-site	60
Burial Ground	4
Laundry	5
Safe Work Permits	58
Beryllium analysis	1
Safety Meetings	2
Excess exposure requests	6
Whole body analysis	12
Green Tags	255

MAN HOUR TABULATION

EXEMPT	NONEXEMPT	TOTAL		EXEMPT	NONEXEMPT	TOTAL
	Scheduled Hours				Actual Hours Worked	
1408	2016	3424		1168½	1778½	2947
	Overtime				Absences	
1½	84	85½	S - 11		33½	44½
			V - 80		88	168
			O - 0		8	8
			H - 128		192	320
			SF - 22		0	22
	TOTAL	3509½			TOTAL	3509½

OLCordes:dc

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